

CLAIMS

What is claimed is:

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1. A method for delivering a cell to a heart of a patient comprising the steps of:
5 providing an apparatus for intracardiac drug administration comprising a
 catheter, said catheter having at least one position sensor which generates signals
 responsive to the position of said catheter, and a drug delivery device for delivering
 said cell;
 inserting said catheter into a chamber of said heart at a site;
10 delivering said cell to said site with said drug delivery device in response to
 said signals from said position sensor.
2. The method according to Claim 1, wherein said cell is a myoblast or a
 myocyte.
3. The method according to Claim 2, including assessing the viability of said
15 heart prior to delivering said cell.
4. The method according to Claim 3, including delivering said cell based on the
 assessed viability of said heart.
5. The method according to Claim 4, including assessing the viability of said
 heart by creating a map of said heart.

6. The method according to Claim 5, including identifying an ischemic zone of said heart on said map.

7. The method according to Claim 6, including determining said site within said ischemic zone.

8. The method according to Claim 7, including assessing the viability of said heart after delivering said cell.

9. The method according to Claim 5, including identifying an infarct region of said heart on said map.

10. The method according to Claim 9, including determining said site at said infarct region.

11. The method according to Claim 10, including assessing the viability of said heart after delivering said cell.

12. The method according to Claim 2, wherein said cell is an expression vector capable of expressing an angiogenic factor.

13. The method according to Claim 12, wherein said expression vector includes a recombinant molecule.

14. The method according to Claim 13, wherein said recombinant molecule is a gene.

15. The method according to Claim 12, wherein said angiogenic factor is a growth factor.

16. The method according to Claim 2, wherein said cell is capable of cell fusion with other cells.

17. The method according to Claim 16, wherein said cell fusion results in myogenesis.

5 18. The method according to Claim 17, wherein said cell is derived from a donor.

19. The method according to Claim 18, wherein said cell is treated prior to delivery.

10 20. The method according to Claim 19, wherein said cell is treated with an immunosuppressant.

21. The method according to Claim 17, wherein said cell is harvested from said patient.

22. The method according to Claim 21, wherein said cell is treated prior to delivery.

15 23. The method according to Claim 22, wherein said treatment results in a genetically superior cell.

24. The method according to Claim 22, wherein said cell is a xenograft.

25. The method according to Claim 1, including creating a channel at said site prior to delivering said cell.

26. The method according to Claim 25, including creating said channel with a laser.

27. The method according to Claim 12, including creating a channel at said site prior to delivering said cell.

5 28. The method according to Claim 27, including creating said channel with a laser.

29. The method according to Claim 16, including creating a channel at said site prior to delivering said cell.

10 30. The method according to Claim 29, including creating said channel with a laser.

31. The method according to Claim 1, including delivering said cell at said site at an oblique angle.

32. The method according to Claim 31, wherein said drug delivery device includes a needle.

15 33. The method according to Claim 31, wherein said drug delivery device is capable of providing a pressure burst.

34. The method according to Claim 32, wherein said needle is retractable.

35. The method according to Claim 25, wherein said drug delivery device includes a needle.

36. The method according to Claim 25, wherein said drug delivery device is capable of providing a pressure burst.

37. The method according to Claim 35, wherein said needle is retractable.

38. The method according to Claim 27, wherein said drug delivery device includes a needle.

39. The method according to Claim 27, wherein said drug delivery device is capable of providing a pressure burst.

40. The method according to Claim 38, wherein said needle is retractable.

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